What is claimed is:

1. A process for treating a silica film on a substrate, which comprises reacting a suitable silica film with a composition comprising a surface modification agent, wherein said silica film is present on a substrate and wherein said reaction is conducted under conditions and for a period of time sufficient for said surface modification agent to form a hydrophobic coating on said film and said surface modification agent comprises at least one type of oligomer or polymer reactive with silanols on said silica film.

2. The process of claim 1 wherein said reaction is conducted in the presence of at least one solvent or co-solvent.

3. The process of claim 1 wherein said silica film is a nanoporous dielectric film having a pore structure that comprises silanols, and wherein said reaction is conducted for a period of time sufficient for said surface modification agent to produce a treated nanoporous silica film having a dielectric constant of about 3 or less.

4. The process of claim 3 that produces a nanoporous silica film having a dielectric constant ranging from about 1.1 to about 3.0.

5. The process of claim 1 wherein said reaction is conducted at a temperature ranging from about 10°C to about 300°C.

6. The process of claim 1 wherein said reaction is conducted for a time period ranging from about 10 seconds to about 1 hour.

7. The process of claim 1 wherein said surface modification agent is a polymer or oligomer that comprises functional groups that will react with silanols.

8. The process of claim 7 wherein said surface modification agent is prepared by reacting a suitable monomer with water in a solvent to form said surface modification agent.

9. The process of claim 2 wherein said solvent or co-solvent is selected from the group consisting of ethers, esters, ketones, glycol ethers, hydrocarbons, chlorinated solvents, low viscosity siloxanes and combinations thereof.

10. The process of claim 2 wherein said co-solvent is selected from the group consisting of ethers, esters, ketones, glycol ethers, hydrocarbons, chlorinated solvents, low viscosity siloxanes and combinations thereof.

11. The process of claim 8 wherein said monomer is selected from the group consisting of a siloxane, a silazane, a silane, a carbosilane, and combinations thereof.

12. The process of claim 8 wherein said water is present in said co-solvent in a concentration ranging from about 0.05 to about 10 percent, by weight, relative to the co-solvent.

13. The process of claim 8 wherein said water is present during said reaction in proportion to said monomer in a ratio ranging from about0.50:1.5 to about 1.5:0.5, mole/mole.

14. The process of claim 8 wherein said monomer compound is selected from the group consisting of said monomer compound is selected from the group consisting of methyltriacetoxysilane, phenyltriacetoxysilane, tris(dimethlyaimino)methylsilane, tris(dimethylamino)phenylsilane, tris(diethylamino)methylsilane and combinations thereof.

15. The process of claim 1 wherein the composition comprises an oligomer or polymer surface modification agent and a monomer surface modification agent, wherein said monomer is reactive with silanol groups on said silica film.

16. The process of claim 1 wherein said silica film is pre-treated with a monomer surface modification agent, wherein said monomer is reactive with silanol groups on said silica film.

17. The process of claim 8 further comprising adding at least one additional monomer to said solution after the water is fully reacted, wherein said monomer is reactive with silanol groups on said silica film.

18. The process of claim 15 wherein the monomer surface modification agent is an selected from the group consisting of siloxanes, silazanes, silanes, carbosilanes and combinations thereof.

19. The process of claim 15 wherein the monomer surface modification agent is selected from the group consisting of acetoxytrimethylsilane, diacetoxydimethylsilane, methyltriacetoxysilane, phenyltriacetoxysilane, diphenyldiacetoxysilane, trimethylethoxysilane, trimethylmethoxysilane, 2-trimethylsiloxypent-2-ene-4-one, n-(trimethylsilyl)acetamide, 2-(trimethylsilyl) acetic acid, n-(trimethylsilyl)imidazole, trimethylsilylpropiolate, trimethylsilyl(trimethylsiloxy)-acetate, nonamethyltrisilazane, hexamethyldisilazane, hexamethyldisiloxane, trimethylsilanol, triethylsilanol, triphenylsilanol, t-butyldimethylsilanol, diphenylsilanediol, tris(dimethylamino)methylsilane, tris(dimethylamino)phenylsilane, tris(dimethylamino)silanemethyltrimethoxysilane, methyltris(methylethylkeoxime)silane. methyltrichlorosilane, and combinations thereof.

20. A dielectric film produced by a process comprising the steps of reacting a suitable silica film with a composition comprising a surface modification agent, wherein said silica film is present on a substrate and wherein said reaction is conducted under conditions and for a period of time sufficient for said surface modification agent to form a hydrophobic coating on said film and said surface modification agent comprises at least one type of oligomer or polymer reactive with silanol groups on said silica film.

21. The dielectric film of claim 20 wherein a stud-test conducted on said film exhibits a film break strength of greater than 2 KPSI and a dielectric constant ranging from about 1.1 to about 3.0.

22. An integrated circuit comprising at least one dielectric silica film treated by reacting said silica film with a surface modification agent, wherein said reaction is conducted under conditions and for a period of time sufficient for said surface modification agent to form a hydrophobic coating on said film, and said surface modification agent comprises at least one type of oligomer or polymer reactive with silanol groups on said silica film.

23. The integrated circuit of claim 22 wherein said surface modification agent is prepared by reacting a suitable monomer with water in a solvent to form said surface modification agent.

24. The integrated circuit of claim 22 wherein said solvent or co-solvent is selected from the group consisting of ethers, esters, ketones, glycol ethers, chlorinated solvents, low viscosity siloxanes and combinations thereof.

25. The integrated circuit of claim 24 wherein said co-solvent is selected from the group consisting of ethers, esters, ketones, glycol ethers, chlorinated solvents, low viscosity siloxanes and combinations thereof.

25. The integrated circuit of claim 23 wherein said monomer is selected from the group consisting of a siloxane, a silazane, a silane, a carbosilane, and combinations thereof.

26. The integrated circuit of claim 23 wherein said water is present in said co-solvent in a concentration ranging from about 0.05 to about 10 percent, by weight, relative to the co-solvent.

27. The integrated circuit of claim 26 wherein said water is present during said reaction in proportion to said monomer in a ratio ranging from about 0.50:1.5 to about 1.5:0.5, mole/mole.

28. The integrated circuit of claim 24 wherein said monomer compound is selected from the group consisting of methyltriacetoxysilane, phenyltriacetoxysilane, tris(dimethlyaimino)methylsilane, tris(dimethylamino)phenylsilane, tris(diethylamino)methylsilane and combinations thereof.

29. A polymer or oligomer surface modification reagent prepared by reacting a suitable monomer with water in a solvent to form said surface modification agent.